Complete Summary

GUIDELINE TITLE

ACR Appropriateness Criteria™ for bone tumors.

BIBLIOGRAPHIC SOURCE(S)

Berquist TH, Dalinka MK, Alazraki N, Daffner RH, DeSmet AA, el-Khoury GY, Goergen TG, Keats TE, Manaster BJ, Newberg A, Pavlov H, Haralson RH, McCabe JB, Sartoris D. Bone tumors. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):261-4. [18 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Bone tumors

GUIDELINE CATEGORY

Diagnosis

CLINICAL SPECIALTY

Nuclear Medicine
Oncology
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations

Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for bone tumors.

TARGET POPULATION

- Patients suspected of bone tumors
- Patients with bone tumors

INTERVENTIONS AND PRACTICES CONSIDERED

1. Routine radiograph
2. Nuclear medicine bone scan
3. Magnetic resonance imaging
4. Ultrasound
5. Computed tomography
6. Angiography
7. Invasive

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, primarily using the National Library of Medicine's MEDLINE database. The developer identified and collected the major applicable articles.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Delphi Method)
Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the Appropriateness Criteria. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. If consensus cannot be reached by this method, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria and the Chair of the ACR Board of Chancellors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Primary Bone Tumors, Suspected

Variant 1: Screening, first study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Routine radiograph	9	Absolute requirement in patient with suspected bone lesion.
Nuclear medicine bone scan	1	
Magnetic resonance imaging	1	
Ultrasound	1	Not indicated as initial study.
Computed tomography	1	Not indicated as initial study.
Angiography	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Clinical Condition: Primary Bone Tumors, Suspected

Variant 2: Persistent symptoms, but radiograph negative.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Nuclear medicine bone scan	8	Positive scan localizes abnormality; further imaging usually indicated.
Magnetic resonance imaging	8	Preferred over nuclear medicine bone scan if pain is local.

Computed tomography	1	
Ultrasound	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Clinical Condition: Primary Bone Tumors (Excluding Osteoid Osteoma)

Variant 3: Benign appearing on radiographs.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Computed tomography	3	May be needed to assess cortex, impending fracture, etc., preoperatively.
Magnetic resonance imaging	3	Generally not indicated, unless more anatomic information, such as relationship of neurovascular structures to the lesion, is needed before surgery.
Ultrasound	1	
Nuclear medicine bone scan	1	
Invasive	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Clinical Condition: Primary Bone Tumors, Suspected

Variant 4: Suspected osteoid osteoma.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Routine radiograph	9	Necessary. Follow with computed tomography if positive.
Nuclear medicine	9	Needed only if x-ray is negative. Follow

bone scan		with computed tomography.
Computed tomography	9	After positive plain film or scan if necessary for confirmation or surgical localization.
Magnetic resonance imaging	2	Lesions not as characteristic as noted on computed tomography. Magnetic resonance may present less clear findings.
Ultrasound	1	
Angiography	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Clinical Condition: Primary Bone Tumors, Suspected

Variant 5: Suspicious or malignant characteristics on radiograph.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Routine radiograph		Already interpreted.
Magnetic resonance imaging	9	Important for staging, marrow, and ST involvement.
Computed tomography	4	Probably not indicated, unless flat bone, cortical, or soft tissue calcification is indicated in x-ray.
Nuclear medicine bone scan	3	Probably not indicated, except to look for additional lesions.
Ultrasound	1	
Angiography	1	Not indicated as a rule, unless anatomy required preoperatively could use magnetic resonance angiography in some cases.
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Summarized by the National Guideline Clearinghouse (NGC).

Summary

There are numerous imaging techniques for evaluating bone tumors. Routine radiographs remain the optimal screening technique. When lesions are characteristically benign, additional imaging may not be required unless needed for preoperative planning. The literature review would suggest that magnetic resonance imaging is the preferred technique for staging of primary bone neoplasms. In some categories computed tomography is equal or superior to magnetic resonance imaging. Computed tomography is preferred for patients with suspected osteoid osteoma, subtle cortical abnormalities, and evaluating lesion calcification or tumor matrix.

Additional exceptions for utilization of magnetic resonance imaging include patient size and clinical status and the presence of certain metallic or electrical implants that may preclude the utilization of magnetic resonance imaging for evaluation of the patient.

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate selection of radiologic exam procedures to evaluate patients with bone tumors or suspected of bone tumors.

POTENTIAL HARMS

None identified

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring

physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Berquist TH, Dalinka MK, Alazraki N, Daffner RH, DeSmet AA, el-Khoury GY, Goergen TG, Keats TE, Manaster BJ, Newberg A, Pavlov H, Haralson RH, McCabe JB, Sartoris D. Bone tumors. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):261-4. [18 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 (revised 1999)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria™.

GUIDELINE COMMITTEE

ACR Appropriateness Criteria™ Committee, Expert Panel on Musculoskeletal Imaging.

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Names of Panel Members: Thomas H. Berquist, MD; Murray K. Dalinka, MD; Naomi Alazraki, MD; Richard H. Daffner, MD; Arthur A. DeSmet, MD; George Y. El-Khoury, MD; Thomas G. Goergen, MD; Theodore E. Keats, MD; B.J. Manaster, MD, PhD; Arthur Newberg, MD; Helene Pavlov, MD; Robert H. Haralson, III, MD; John B. McCabe, MD; David Sartoris, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline. It is a revision of a previously issued version (Appropriateness criteria for bone tumors. Reston [VA]: American College of Radiology (ACR); 1995. 4 p. [ACR Appropriateness Criteria™]).

The ACR Appropriateness Criteria™ are reviewed after five years, if not sooner, depending upon introduction of new and highly significant scientific evidence. The next review date for this topic is 2004.

GUIDELINE AVAILABILITY

Electronic copies: Available from the American College of Radiology (ACR) Web site.

Print copies: Available from ACR, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on May 6, 2001. The information was verified by the guideline developer as of June 29, 2001.

COPYRIGHT STATEMENT

Date Modified: 11/8/2004